

WHAT IS CLAIMED IS:

1. A TDDB test pattern comprising:

a plurality of unit test pattern cells each having an MOS capacitor, an MOS transistor, and a fuse for controlling operations of the MOS capacitor and the MOS transistor;

a first voltage supplying unit for supplying a stress voltage to the MOS capacitor and the MOS transistor in each unit test pattern cell on the same time;

an ammeter for continuous measurement of a total current from the plurality of unit test pattern cells, to measure a total time to breakdown of the plurality of unit test pattern cells;

a plurality of VFN's(Voltage Forcing Nodes) each positioned between the first voltage supplying unit and the fuse in the unit test pattern cell;

a DCMN(Drain Current Measuring Node) positioned between the ammeter and a drain terminal of the MOS transistor in each of the plurality of unit test pattern cells; and,

a second voltage supplying unit for applying a voltage to the drain terminal of the MOS transistor.

2. A TDDB test pattern as claimed in claim 1, wherein the plurality of unit test pattern cells are connected in parallel between the first voltage supplying unit and the ammeter.

T0621T" 08956660

3. A TDDB test pattern as claimed in claim 1, wherein the TDDB test pattern includes;

input/output pads of

a substrate pad for connecting the MOS capacitor and a bulk electrode of the MOS transistor,

a source pad for connecting source electrodes of the MOS transistors,

a VFN pad for connecting a plurality of the VFNs, and

a DCMN pad for connecting the DCMNs.

4. A TDDB test pattern as claimed in claim 1, wherein, when a constant stress voltage is applied to the MOS transistor in an inversion mode, the MOS capacitor and the MOS transistor are of the same type.

5. A TDDB test pattern as claimed in claim 1, wherein, when a constant stress voltage is applied to the MOS transistor in an accumulation mode, the MOS capacitor and the MOS transistor are of opposite types.

6. A TDDB test pattern as claimed in claim 1, wherein a dielectric film in the MOS capacitor has a thickness thinner than a thickness of a gate oxide film of the MOS transistor.

7. A TDDB test pattern as claimed in claim 1, wherein the gate electrode of the MOS transistor is formed of a material doped lightly.

FOIA b 7 - D08956660

8. A TDDB test pattern as claimed in claim 1, wherein the fuse is formed of a metal line with a small width.

9. A TDDB test pattern as claimed in claim 4, wherein additional source, and drain are formed to the MOS capacitor in a case when it is intended to apply a voltage stress in the inversion mode.

10. A TDDB test pattern as claimed in claim 1, wherein the VFNs in the plurality of the unit test pattern cells are connected in one, and the DCMNs in the plurality of the unit test pattern cells are also connected into one.

11. A method for testing TDDBs of MOS capacitor dielectric films using a TDDB test pattern, comprising the steps of:

(1) applying a stress voltage to an input electrode on each of an MOS capacitor and an MOS transistor in each of a plurality of unit test pattern cells from a first voltage supplying unit, and applying a voltage to a drain electrode of the MOS transistor from a second voltage supplying unit;

(2) measuring a total drain current from the MOS transistor in each of the plurality of unit test pattern cells, to which the stress voltage is applied; and,

(3) measuring a last change of the total drain current from the MOS transistor in the plurality of unit test pattern cells, to measure a maximum time to breakdown of a plurality of MOS capacitor dielectric films in the

0995680-112901
T0621-0895660

plurality of unit test pattern cells.

12. A method as claimed in claim 11, wherein the drain of the MOS transistor is applied of a voltage in a linear region or a saturation region in measuring a time to breakdown of the dielectric film of the MOS capacitor.

ADD
B1

00995680-112901
"0621" 08956660